



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/673,230 | 06/16/2003 | Paul D. Lusk | 960067.ORI | 3805 |

7590 09/22/2005

Nikolai Mersereau & Dietz
820 International Centre
900 Second Avenue South
Minneapolis, MN 55402-3813

EXAMINER

MITCHELL, KATHERINE W

ART UNIT PAPER NUMBER

3677

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/673,230 | LUSK ET AL. | |
| | Examiner | Art Unit | |
| | Katherine W. Mitchell | 3677 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-36 is/are pending in the application.
- 4a) Of the above claim(s) 28-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-27 and 34-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: <u>20050829</u> . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>5/13/2005</u> . | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to the following patentably distinct species of the claimed invention:

Group 1 - claims 22-27 and 34-36

Group II - claims 28-33.

2. Applicant is required under 35 U.S.C. 121 to elect a single claimed species based on the composition of the propellant (i.e. Applicant must elect the species having or not having dibutyl phthalate) for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claims appear to be generic.

3. Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Art Unit: 3677

3. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

4. During a telephone conversation with Nicolai Mersersau on week ending 9/10/2005 a provisional election was made with traverse to prosecute the invention of claims 22-27 and 34-36. Affirmation of this election must be made by applicant in replying to this Office action. Claims 28-33 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

5. The disclosure is objected to because of the following informalities: on page 9, lines 12-17, the wording is unclear. Applicant states :

*Thus, high grade nitrocellulose which has above about 13.15% N is practically insoluble in ether, but is readily dispersed by plasticizers and acetone. Below about 13.15% N, **either** can be used. In some cases, combinations*

Art Unit: 3677

of acetone or ether and other solvents such as alcohols or other ketones are preferred.

Does "either" refer to ether and (plasticizers or acetone) or does it refer to plasticizers and acetone? Appropriate correction is required.

Claim Objections

6. Claims 35-36 are objected to because of the following informalities: the claims are identified as "new", but have strikeouts and underlining indicating they are amended. Applicant is reminded the amendment filed 01/03/05 was not entered. Appropriate correction is required.

7. The amendment filed 1/30/2005 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: "efficient" non-energetic plasticizers were not disclosed, not the fact that smaller amounts of non-energetic plasticizers can be substituted for all energetic plasticizers.

Applicant is required to cancel the new matter in the reply to this Office Action, or specifically point out where in the specification the support is found..

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 22-27 and 34-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 3677

- Claims 35, and 36 contain "(about 13.2%N)" in parenthesis. First, is this limitation being claimed? A limitation in parenthesis is unclear - is it or is it not required as part of the claim? Claim 34 depends on claim 27 which depends on claim 36, and claim 27 recites only the limitation that the nitrocellulose is about 13.2%N. Since claim 27 must further limit the parent claim, examiner assumes the limitation is not positively claimed.

- Claims 35 and 36 are also rejected as indefinite, as "a desired level of mechanical properties" is unclear. What is desired, and by what/whose standards? What mechanical properties are being considered? Further, what is considered "efficient"?

- Claims 22-27 and 29-34 are rejected as depending from rejected claims.
- Claims 34-36 are also rejected as indefinite, as "13.2%N" is unclear -- is this weight percent or mole percent?

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 35 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Plunigian USP 3451883.

Art Unit: 3677

Examiner notes -- Applicant is claiming only one thing - a non energetic plasticizer. Other than the preamble defining "an efficient non-energetic plasticizer", the only requirement is that it be selected from the choices listed.

Pluniguian teaches an efficient non-energetic plasticizer, which consists of material selected from adipate compounds, including consisting of -- diisobutyl adipate or dibutyl phthalate (Plunguian -- col 4 lines 20-42).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 22-27 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oversohl USP 3364086 in view of Elrick USP 4029529 and Plunguian USP 3451883 and Yunan USP 5187320.

Oversohl discloses a non-energetic plasticizer suitable for plasticizing high Nitrogen content nitrocellulose in a DNT-free single base propellant formulation. The formulation is capable of being used in a propellant capable of firing some type of projectile. The plasticizer consists of material selected from ATEP, acetyltri-n-butyl citrate, triethyl citrate, tributyl citrate, diisobutyl adipate, diisooctyl adipate, and mixtures thereof, such that the non-energetic plasticizer enables substitution of a smaller amount of said plasticizer for all high energetic plasticizers, including DNT. First, examiner notes that in an apparatus claim, as long as the claimed structure is capable of

Art Unit: 3677

performing the intended use, the limitation is considered to be met. Further, if the same compound is disclosed, it is assumed to inherently have the same properties, such as enabling substitution of a smaller amount.

Although not positively claimed, examiner notes that Oversohl teaches 13.1% N nitrocellulose, which is "about" 13.2%N in col 3 line 46, example 1, and table 1 discloses 40-99% nitrocellulose (nitrocellulose with no nitroglycerin or nitroguanidine and thus inherently single-base, up to 99% includes 93-97%), a non-energetic plasticizer (diethylphthalate, 0-30% includes 2-5 %) and has no DNT. Note that example 1 includes dibutylphthalate in a very small amount, which can be considered to be "about" 2%. However, Oversohl does not teach the specified non-energetic plasticizer.

Elrick teaches that multiple plasticizers for nitrocellulose can be used together including phthalates and adipates, (col 4 lines 5-16) and that ethyl centralite is a known nitrocellulose stabilizer. (col 5 lines 1-3) (claim 29)

Plunguian and Yunan teach that among the many possible plasticizers for nitrocellulose are diisobutyl adipate and dibutyl phthalate (Plunguian -- col 4 lines 20-42) and acetyl triethyl citrate (Yunan -- col 4 lines 18-30)

Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Oversohl and Plunguian and Yunan before him at the time the invention was made, to modify Oversohl as taught by Plunguian and Yunan to include the alternate well-known non-energetic plasticizers of Plunguian and Yunan, since they will perform in the same manner and are well known alternatives. It would also have been obvious to one of ordinary skill in the art, having the teachings of Oversohl and

Art Unit: 3677

Elrick before him at the time the invention was made, to modify Oversohl as taught by Elrick to include multiple plasticizers and substitute ethyl centralite for the diphenylamine as the stabilizer, since they will perform in the same manner and are well known alternatives.

14. Claim 22-27 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunigan et al. USP 3711343 in view of Elrick USP 4029529 and Plunguian USP 3451883 and Yunan USP 5187320.

Dunigan discloses a non-energetic plasticizer suitable for plasticizing high Nitrogen content nitrocellulose in a DNT-free single base propellant formulation. (Example I and II, col 2 lines 10-col 3 line 16). The formulation is capable of being used in a propellant capable of firing some type of projectile (col 1 lines 32-40). The plasticizer consists of material selected from ATEP, acetyltri-n-butyl citrate, triethyl citrate, tributyl citrate, diisobutyl adipate, diisooctyl adipate, and mixtures thereof, such that the non-energetic plasticizer enables substitution of a smaller amount of said plasticizer for all high energetic plasticizers, including DNT (col 2 lines 44-52). First, examiner notes that in an apparatus claim, as long as the claimed structure is capable of performing the intended use, the limitation is considered to be met. Further, if the same compound is disclosed, it is assumed to inherently have the same properties, such as enabling substitution of a smaller amount.

Although not positively claimed, examiner notes that Dunigan teaches 12.6% N nitrocellulose, which is "about" 13.2%N in col 2 lines 33-39, example 1 and II discloses 61 and 70.2% nitrocellulose (nitrocellulose with no nitroglycerin or nitroguanidine and

Art Unit: 3677

thus inherently single-base, 98% in col2 is about 97%), a non-energetic plasticizer (diethylphthalate, 1% is about 2-5 %) and has no DNT. However, Dunigan does not teach the specified non-energetic plasticizer.

Elrick teaches that multiple plasticizers for nitrocellulose can be used together including phthalates and adipates, (col 4 lines 5-16) and that ethyl centralite is a known nitrocellulose stabilizer. (col 5 lines 1-3) (claim 29)

Plunguian and Yunan teach that among the may possible plasticizers for nitrocellulose are diisobutyl adipate and dibutyl phthalate (Plunguian -- col 4 lines 20-42) and acetyl triethyl citrate (Yunan -- col 4 lines 18-30)

Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Dunigan and Plunguian and Yunan before him at the time the invention was made, to modify Dunigan as taught by Plunguian and Yunan to include the alternate well-known non-energetic plasticizers of Plunguian and Yunan, since they will perform in the same manner and are well known alternatives. It would also have been obvious to one of ordinary skill in the art, having the teachings of Dunigan and Elrick before him at the time the invention was made, to modify Dunigan as taught by Elrick to include multiple plasticizers and substitute ethyl centralite for the diphenylamine as the stabilizer, since they will perform in the same manner and are well known alternatives.

Response to Arguments

15. Applicant's arguments filed 1/30/2005 have been fully considered but they are not persuasive.

Although examiner agrees that Elrick teaches rocket propellant, that is intended

Art Unit: 3677

use, and the base references so modified would be capable of being used in projectile firing. Elrick was used only to show that certain inert multiple plasticizers are known to be used with nitrocellulose. Similarly, the base references, Oversohl and Dunigan, teach the highN content of about 12.6%N. Further, the base references clearly teach inert or no-energetic plasticizers, and Elrick is used only to show that other inert plasticizers in addition to those taught in the base reference are known.

In response to applicant's argument that applicant has a different reason for using the specified plasticizer, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

In response to applicant's argument that the references are not to projectile propellants, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Further, a rocket is considered a projectile:

rock·et (rŏk'it) *noun*

1. a. A rocket engine. b. A vehicle or device propelled by one or more rocket engines, especially such a vehicle designed to travel through space.
2. A projectile weapon carrying a warhead that is powered and propelled by rockets.
3. A projectile firework having a cylindrical shape and a fuse that is lit from the rear. ¹

¹Excerpted from *The American Heritage Dictionary of the English Language, Third Edition* Copyright © 1992 by Houghton Mifflin Company. Electronic version licensed from Lernout & Hauspie Speech Products N.V., further reproduction and distribution restricted in accordance with the Copyright Law of the United States. All rights reserved.

Art Unit: 3677

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Examiner believes it is well known to use inert plasticizers with nitrocellulose, and that the inert plasticizers claimed are well known to those of ordinary skill in the art.

Yunan and Pluniguan do are used only to teach specific components are known as inert plasticizers for use with nitrocellulose.

Examiner notes that independent claims 35 and 36 are claiming only the plasticizer, and thus once the plasticizer is known, its inherent properties remain inherent.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure..

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine W. Mitchell whose telephone number is 571-272-7069. The examiner can normally be reached on Mon - Thurs 10 AM - 8 PM.

Art Unit: 3677

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J. J. Swann can be reached on 571-272-7075. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Katherine W Mitchell
Examiner
Art Unit 3677

A handwritten signature in black ink, appearing to read "Katherine W Mitchell", written in a cursive style.

Kwm
9/18/2005